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The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

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U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DOUGLAS N. CURRY

Appeal No. 2005-0444
Application No. 10/025,671¹

ON BRIEF

Before HAIRSTON, LEVY and SAADAT, Administrative Patent Judges.
SAADAT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1-6, 8, 9 and 13-18. The Examiner has previously indicated the allowability of claims 7 and 10-12.

We reverse.

BACKGROUND

Appellant's invention is generally directed to compression and decompression of image data and, in particular, to methods that compress and decompress image areas containing edges of

¹ Application for patent filed December 26, 2001, which according to Appellant, is a continuation of Application No. 09/219,850, filed December 23, 1998, now U.S. Patent No. 6,771,827.

marks to be rendered in image data based on the direction of the edges of the mark (specification, page 1). Thus, by differentiating between continuous tone data and non-continuous tone data the compression and decompression can be tailored to the information within the data necessary for printing the particular type of data (specification, page 9).

Representative independent claims 1, 13 and 15 are reproduced below:

1. A method for decompressing image data, that is compressed by discarding pixels along a direction parallel to an edge while maintaining pixels along a direction perpendicular to the edge, representing a plurality of pixels and represented by a plurality of bitwords, each pixel corresponding to a separate bitword, the process comprising:

decompressing data from a compressed-data-bitword to provide data indicative of a plurality of explicit pixels; and

synthesizing data from the data indicative of the plurality of explicit pixels to provide data corresponding to at least one synthesized pixel, the at least one synthesized pixel representing at least one discarded pixel.

13. A method for decompressing compressed image data that is compressed by discarding pixels along a direction parallel to an edge while maintaining pixels along a direction perpendicular to the edge, the method comprising:

decompressing a single byte of compressed data to produce four pixels of non-continuous tone data.

15. A decompression system for decompressing image data, the image data containing non-continuous tone data and continuous tone data, the non-continuous tone data compressed by discarding pixels along a direction parallel to an edge while maintaining

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pixels along a direction perpendicular to the edge, the system comprising:

a decompressor that decompresses a data bitword-map to provide high spatial resolution data containing non-continuous tone data using extra resolution in a direction substantially perpendicular to an edge of marks, and that decompresses the data bitword-map to provide low spatial resolution continuous tone data.

The Examiner relies on the following references in rejecting the claims:

Hyatt	5,487,172	Jan. 23, 1996
Honma et al. (Honma)	5,774,634	Jun. 30, 1998
Shannon et al. (Shannon)	6,026,196	Feb. 15, 2000 (filed Oct. 15, 1997)
Hsu et al. (Hsu)	6,389,176	May 14, 2002 (filed Sep. 25, 1998)

Appellant's admitted prior art (APA), "Description of Related Art" in Appellant's specification, page 1, lines 14-25.

Claims 1-6, 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Honma, Hsu and Hyatt.

Claims 13, 14 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shannon and Hyatt.

Claims 15-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Honma, APA and Hyatt.

We make reference to the answer (Paper No. 25, mailed May 5 2004) and the final rejection (Paper No. 22, mailed September 24, 2003) for the Examiner's reasoning and to the appeal brief (Paper No. 24, filed February 18, 2004) and the reply brief (Paper No. 26, filed June 15, 2004) for Appellant's arguments thereagainst.

OPINION

At the outset we note Appellant's intention that the claims corresponding to each ground of rejection stand or fall together as one group (brief, page 6). In accordance with this grouping, and pursuant to 37 CFR § 41.37, we will limit our review of the appeal to claims 1, 13 and 15 as the representative claims of their corresponding groups.

With respect to claim 1, The Examiner relies on Figure 4 of Honma for teaching the step of decompressing data from the compressed bitword and on Hsu for implicitly disclosing synthesized pixels for edge enhancement (final, page 3). The Examiner further relies on Hyatt and takes the position that the reference teaches removal of pixels along a horizontal direction while selecting pixels along the vertical direction (final, page 4).

Appellant argues that neither Hsu nor Hyatt teaches or suggests the edge enhancement and discarding of pixels in the direction parallel to the edge while those along a direction perpendicular to the edge are maintained, as recited in claim 1 (brief, page 12). In particular, Appellant asserts that Hsu uses dilation and erosion operations to add or remove pixels from the boundaries in the original image instead of discarding pixels for decompressing image data (id.). Appellant further asserts that

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Hyatt merely fills pixels between a prior edge and the next edge of a moving surface based on pixel fill information and color information and discloses nothing related to the claimed compressed image data (brief, pages 12 & 13).

In response to Appellant's arguments, the Examiner asserts that the step of discarding pixels in the preamble of the claim, which is taught by removing pixels during the pre-process of Hsu, is not linked to the step of "synthesizing" recited in the body of the claim which is taught by Hyatt (answer, page 4). Furthermore, the Examiner refers to the Hyatt's selection of "pixels along the vertical direction perpendicular to the edge (Hyatt, col. 206, lines 26-29) as the claimed maintaining pixels in a direction perpendicular to the edge (answer, page 4).

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To reach a conclusion of obviousness under § 103, the examiner must produce a factual basis supported by teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Such evidence is required in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). The Examiner must not only identify the

elements in the prior art, but also show "some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead the individual to combine the relevant teachings of the references." In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

A review of Hsu and Hyatt confirms that neither reference teaches compressing image data by discarding pixels along a direction parallel to an edge while maintaining pixels along a direction perpendicular to the edge, as recited in claim 1. Both discarding and maintaining pixels are for compressing image data which is also recited in the body of the claim as being used for the step of decompressing. Therefore, we disagree with the Examiner's assertion that the treatment of the pixels in a parallel direction compared to a perpendicular direction with respect to the edge is not linked to the step of synthesizing. Where a patentee uses the claim preamble to recite structural limitations of his claimed invention, the PTO and courts give effect to that usage. See Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620, 34 USPQ2d 1816, 1820 (Fed. Cir. 1995); Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989). Here, although discarding and maintaining the pixels appear only in the preamble of the claim, they are affirmative

structural/process limitations since the form of the claim and the language in the specification limit the claimed invention to that kind of compressed image data.

As pointed out by Appellant (brief, page 12), Hsu provides for the operations of dilation and erosion which add or remove pixels to the boundary of the edges (col. 5, lines 19-30). Nowhere in Hsu discarding or maintaining pixels based on their direction with respect to the edge data is discussed. Similarly, Hyatt, in the sections relied on by the Examiner, merely describes a fill process based on generating the next and the previous pixels for a moving edge (col. 205, lines 43-45). Although Hyatt discusses the effect of the moving edge on adjacent pixels and how the more removed from the edge pixel the adjacent pixels are, the less the effect of the slope of the edge becomes (col. 206, lines 5-19), there is no teaching related to the claimed discarding or maintaining of pixels of an image data.

As discussed above, Hsu and Hyatt merely provide for compressed and reduced pixel images either for image resizing or a fill process, respectively, which do not differentiate between the pixels along the edge or perpendicular to an edge. In concluding that Hsu teaches the removing of the pixels while Hyatt "selects pixels along the vertical direction perpendicular to the edge," the Examiner attempts to forge a combination of a

image processing technique that lacks all the elements of the claimed method of decompressing image data. Thus, assuming, arguendo, that it would have been obvious to combine Hsu and Hyatt with Honma, as held by the Examiner, the combination would still fall short of teaching or suggesting the claimed image data that is compressed by discarding or maintaining pixels. Therefore, as the Examiner has failed to set forth a prima facie case of obviousness, we cannot sustain the 35 U.S.C. § 103 rejection of independent claim 1 and claims 2-6, 8 and 9 dependent therefrom.

Turning now to the 35 U.S.C. § 103 rejection of claims 15-17 over Honma, APA and Hyatt, Appellant argues that the fill process of Hyatt adds nothing to Honma to overcome the discussed deficiencies related to maintaining or discarding pixels along or perpendicular to an edge (brief, pages 13 & 14). Additionally, Appellant points out that APA, although defining continuous and non-continuous tone art information, does not describe the recited manner of decompression (brief, page 14; reply brief, page 3). The Examiner's response focuses on the previously discussed teachings of Honma and Hyatt and how APA discloses high spatial resolution data containing non-continuous tone data using extra resolution across the edges (answer, page 5).

We find ourselves convinced by Appellant's argument that APA lacks the specific teachings related to compressing image data by discarding and maintaining pixels. In fact, APA merely describes the nature of processing continuous and non-continuous tone data which necessitates using a higher spatial resolution for rendering continuous tone data compared with non-continuous tone data (specification, page 1). Claim 15, on the other hand, requires that the continuous and non-continuous tone data be compressed by maintaining pixels along a direction perpendicular to an edge which, using extra resolution, is decompressed to provide a high spatial resolution. Therefore, as argued by Appellant, APA does not disclose the manner by which such resolution may be achieved and therefore, cannot cure the deficiencies of Honma and Hyatt. Accordingly, the 35 U.S.C. § 103 rejection of claims 15-17 over Honma, APA and Hyatt cannot be sustained.

Finally, with respect to the 35 U.S.C. § 103 rejection of claims 13, 14 and 18 over Shannon and Hyatt, Appellant argues that compressing the image by discarding and maintaining pixels in directions parallel and perpendicular to the edge is not disclosed in any of the references (brief, page 15). Appellant further asserts that Shannon describes dithering of a color image to convert the color image into monochrome image data (brief,

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page 16) and has nothing to do with compressing and decompressing of pixels of non-continuous tone data (reply brief, page 5). The Examiner characterizes the decompressing process of Shannon that extracts the 0 to 3 pixels from the Sync Byte (Shannon, col. 10, lines 43-46) as the claimed decompressed data "to produce four pixels of non-continuous tone data" (answer, page 6).

We agree with Appellant that the process disclosed by Shannon does not include tone information in compressing and decompressing processes. Furthermore, as discussed above, Hyatt's process of filling pixel information lacks the specific claimed image data that is compressed by discarding pixels along a direction parallel to an edge while maintaining pixels along a direction perpendicular to the edge. As the combination of prior art provides no teaching or suggestion with respect to the claimed features discussed above, we find that the Examiner has failed to establish a prima facie case of obviousness with respect to claims 13, 14 and 18 and therefore, their 35 U.S.C. § 103 rejection over Shannon and Hyatt cannot be sustained.

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CONCLUSION

In view of the foregoing, the decision of the Examiner rejecting claims 1-6, 8, 9 and 13-18 under 35 U.S.C. § 103 is reversed.

REVERSED

KENNETH W. HAIRSTON

KENNETH W. HAIRSTON
Administrative Patent Judge

STUART S. LEVY

STUART S. LEVY
Administrative Patent Judge

Markus D. Sadat

MAHSHID D. SAADAT
Administrative Patent Judge

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